

Performance Measure Summary - Portland OR-WA

There are several inventory and performance measures listed in the pages of this Urban Area Report for the years from 1982 to 2017. There is no single performance measure that experts agree "says it all". A few key points should be recognized by users of the Urban Mobility Scorecard data.

Use the trends - The multi-year performance measures are better indicators, in most cases, than any single year. Examining a few measures over many years reduces the chance that data variations or the estimating procedures may have caused a "spike" in any single year. (5 years is 5 times better than 1 year.)

Use several measures - Each performance measure illustrates a different element of congestion. (The view is more interesting from atop several measures.)

Compare to similar regions - Congestion analyses that compare areas with similar characteristics (for example, population, growth rate, road and public transportation system design) are usually more insightful than comparisons of different regions. (Los Angeles is not Peoria.)

Compare ranking changes and performance measure values - In some performance measures, a small change in the value may cause a significant change in rank from one year to the next. This is the case when there are several regions with nearly the same value. (15 hours is only 1 hour more than 14 hours.)

Consider the scope of improvement options - Any improvement project in a corridor within most of the regions will only have a modest effect on the regional congestion level. (To have an effect on areawide congestion, there must be significant change in the system or service.)

Performance Measures and Definition of Terms

Travel Time Index - A measure of congestion that focuses on each trip and each mile of travel. It is calculated as the ratio of travel time in the peak period to travel time in free-flow. A value of 1.30 indicates that a 20-minute free-flow trip takes 26 minutes in the peak.

Planning Time Index - A travel time reliability measure that represents the total travel time that should be planned for a trip. Computed with the 95th percentile travel time it represents the amount of time that should be planned for a commute trip to be late for only 1 day a month. If it is computed with the 80th percentile travel time it represents the amount of time that should be planned for a trip to be late for only 1 day a week. A PTI of 2.00 means that for a 20-minute trip in light traffic, 40 minutes should be planned.

Peak Commuters - Number of travelers who begin a trip during the morning or evening peak travel periods (6 to 10 a.m. and 3 to 7 p.m.). "Commuters" are private vehicle users unless specifically noted.

Annual Delay per Commuter - A yearly sum of all the per-trip delays for those persons who travel in the peak period (6 to 10 a.m. and 3 to 7 p.m.). This measure illustrates the effect of traffic slowdowns as well as the length of each trip.

Total Delay - The overall size of the congestion problem. Measured by the total travel time above that needed to complete a trip at free-flow speeds. The ranking of total delay usually follows the population ranking (larger regions usually have more delay).

Free-Flow Speeds - These values are derived from time periods with lighter traffic volumes in the INRIX speed database. They are used as the national comparison thresholds. Other speed thresholds may be appropriate for urban project evaluations or sub-region studies.

Excess Fuel Consumed - Increased fuel consumption due to travel in congested conditions rather than free-flow conditions.

Congestion Cost - Value of travel delay for 2017 (estimated at \$18.29 per hour of person travel and \$59.94 per hour of truck time) and excess fuel consumption estimated using state average cost per gallon.

Urban Area - The developed area (population density more than 1,000 persons per square mile) within a metropolitan region. The urban area boundaries change frequently (every year for most growing areas), so increases include both new growth and development that was previously in areas designated as rural.

Number of Rush Hours - Time when the road system might have congestion.

Mobility Data for Portland OR-WA

Inventory Measures	2017	2016	2015	2014	2013	2012
Urban Area Information						
Population (1000s)	2,050	2,030	2,010	1,990	1,975	1,950
Rank	23	22	23	23	23	23
Commuters (1000s)	900	887	870	850	834	824
Daily Vehicle-Miles of Travel (1000s)						
Freeway	14,717	14,689	14,516	13,974	13,536	13,565
Arterial Streets	14,738	14,641	14,467	14,375	13,799	13,880
Cost Components						
Value of Time (\$/hour)	18.12	17.91	17.69	17.67	17.39	17.14
Commercial Cost (\$/hour)	52.14	50.20	46.87	44.82	41.23	39.66
Gasoline (\$/gallon)	2.69	2.42	2.64	3.51	3.70	3.67
Diesel (\$/gallon)	2.68	2.42	2.68	3.71	3.92	4.06
System Performance	2017	2016	2015	2014	2013	2012
Congested Travel (% of peak VMT)	36.7	--	--	--	--	--
Congested System (% of lane-miles)	22.1	--	--	--	--	--
Congested Time (number of "Rush Hours")	4.8	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	40,780	40,462	39,813	39,065	38,880	38,190
Rank	17	17	17	17	17	17
Fuel per Peak Auto Commuter (gallons)	31	32	31	29	29	29
Rank	7	6	6	8	6	5
Annual Delay						
Total Delay (1000s of person-hours)	88,009	86,454	83,612	80,615	79,522	76,716
Rank	21	21	21	22	21	21
Delay per Auto Commuter (pers-hrs)	66	64	62	60	58	55
Rank	14	14	15	14	14	17
Travel Time Index						
Rank	1.35	1.35	1.36	1.35	1.35	1.35
Rank	7	6	6	6	6	6
Commuter Stress Index						
Rank	1.43	--	--	--	--	--
Rank	10	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	2.37	--	--	--	--	--
Rank	5	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,806	1,741	1,667	1,637	1,591	1,515
Rank	21	21	21	21	21	21
Cost per Auto Commuter (\$)	1,305	1,291	1,240	1,189	1,185	1,159
Rank	15	15	14	14	14	13
Truck Congestion						
Annual Person-Hours of Delay (000)	3,696	3,631	3,512	3,386	3,340	3,222
Rank	21	21	21	22	21	21
Annual Gallons of Wasted Fuel (000)	8,645	8,578	8,440	8,282	8,243	8,096
Rank	17	17	17	17	17	17
Annual Congestion Cost (\$ million)	192	181	167	164	153	145
Rank	22	22	22	21	21	21

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for Portland OR-WA

Inventory Measures	2011	2010	2009	2008	2007	2006
Urban Area Information						
Population (1000s)	1,925	1,900	1,861	1,830	1,800	1,755
Rank	23	23	23	23	24	25
Commuters (1000s)	811	798	780	764	750	730
Daily Vehicle-Miles of Travel (1000s)						
Freeway	15,084	14,788	14,000	13,365	13,625	13,605
Arterial Streets	14,039	13,857	13,600	13,540	13,810	13,945
Cost Components						
Value of Time (\$/hour)	16.79	16.28	16.01	16.07	15.47	15.06
Commercial Cost (\$/hour)	44.62	42.50	41.83	40.77	39.30	37.88
Gasoline (\$/gallon)	3.56	2.86	2.42	3.54	3.14	2.81
Diesel (\$/gallon)	3.91	3.10	2.63	4.27	3.45	3.03
System Performance	2011	2010	2009	2008	2007	2006
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	36,405	34,113	31,922	31,682	31,388	30,762
Rank	17	17	19	18	19	20
Fuel per Peak Auto Commuter (gallons)	28	27	23	23	23	22
Rank	6	6	10	13	13	18
Annual Delay						
Total Delay (1000s of person-hours)	71,801	66,658	61,210	57,858	57,321	56,177
Rank	22	22	22	24	25	25
Delay per Auto Commuter (pers-hrs)	54	51	48	46	47	47
Rank	16	15	19	25	24	24
Travel Time Index						
Rank	1.34	1.32	1.31	1.31	1.31	1.32
Rank	8	9	9	9	11	11
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	1,405	1,243	1,112	1,095	1,033	977
Rank	21	22	23	24	25	25
Cost per Auto Commuter (\$)	1,118	1,071	999	937	965	971
Rank	16	18	20	26	26	23
Truck Congestion						
Annual Person-Hours of Delay (000)	3,016	2,800	2,571	2,430	2,407	2,359
Rank	22	22	22	24	25	25
Annual Gallons of Wasted Fuel (000)	7,718	7,232	6,767	6,717	6,654	6,522
Rank	17	17	19	18	19	20
Annual Congestion Cost (\$ million)	148	127	112	116	106	98
Rank	21	23	23	22	24	24

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for Portland OR-WA

Inventory Measures	2005	2004	2003	2002	2001	2000
Urban Area Information						
Population (1000s)	1,730	1,700	1,650	1,615	1,590	1,545
Rank	25	25	26	26	26	26
Commuters (1000s)	715	700	677	652	632	604
Daily Vehicle-Miles of Travel (1000s)						
Freeway	13,620	13,085	12,945	12,905	12,670	12,595
Arterial Streets	13,850	13,555	12,510	11,610	11,440	11,470
Cost Components						
Value of Time (\$/hour)	14.58	14.10	13.73	13.43	13.22	12.85
Commercial Cost (\$/hour)	36.51	35.19	33.92	32.69	31.51	30.38
Gasoline (\$/gallon)	2.48	2.11	1.65	1.52	1.67	1.64
Diesel (\$/gallon)	2.77	2.19	1.65	1.47	1.67	1.61
System Performance	2005	2004	2003	2002	2001	2000
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	30,159	29,700	28,219	27,073	25,999	24,157
Rank	20	19	20	20	19	19
Fuel per Peak Auto Commuter (gallons)	22	22	21	21	20	18
Rank	15	12	13	12	11	16
Annual Delay						
Total Delay (1000s of person-hours)	55,076	54,237	51,534	49,440	47,480	44,115
Rank	25	24	25	23	23	23
Delay per Auto Commuter (pers-hrs)	47	47	46	46	45	44
Rank	22	22	20	17	17	16
Travel Time Index						
Rank	1.32	1.32	1.31	1.31	1.31	1.30
Rank	8	7	8	6	6	6
Commuter Stress Index						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	920	866	789	736	700	632
Rank	25	23	24	24	23	23
Cost per Auto Commuter (\$)	984	1,002	979	960	933	892
Rank	23	22	22	21	19	20
Truck Congestion						
Annual Person-Hours of Delay (000)	2,313	2,278	2,164	2,076	1,994	1,853
Rank	25	24	25	23	23	23
Annual Gallons of Wasted Fuel (000)	6,394	6,296	5,983	5,739	5,512	5,121
Rank	20	19	20	20	19	19
Annual Congestion Cost (\$ million)	92	84	74	68	64	58
Rank	23	23	23	23	23	22

* Note: Zeroes in the table reflect values less than 0.5.

Mobility Data for Portland OR-WA

Inventory Measures	1999	1998	1997	1996	1995	1994
Urban Area Information						
Population (1000s)	1,510	1,470	1,440	1,355	1,330	1,305
Rank	26	26	26	28	27	28
Commuters (1000s)	581	557	536	497	480	463
Daily Vehicle-Miles of Travel (1000s)						
Freeway	12,350	12,020	11,900	11,610	11,105	10,630
Arterial Streets	11,340	11,230	10,970	10,580	10,505	10,485
Cost Components						
Value of Time (\$/hour)	12.43	12.17	11.98	11.71	11.37	11.06
Commercial Cost (\$/hour)	29.28	28.89	28.50	28.12	27.75	27.38
Gasoline (\$/gallon)	1.47	1.19	1.40	1.37	1.28	1.24
Diesel (\$/gallon)	1.37	1.27	1.39	1.40	1.31	1.26
System Performance	1999	1998	1997	1996	1995	1994
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	22,498	21,035	19,824	17,645	16,269	14,915
Rank	20	20	20	23	23	25
Fuel per Peak Auto Commuter (gallons)	17	16	16	14	13	12
Rank	17	18	14	18	19	21
Annual Delay						
Total Delay (1000s of person-hours)	41,085	38,414	36,203	32,223	29,710	27,237
Rank	23	24	24	26	27	27
Delay per Auto Commuter (pers-hrs)	42	41	40	38	36	34
Rank	17	17	17	17	19	19
Travel Time Index						
Rank	6	6	7	7	6	7
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	566	514	481	419	375	335
Rank	23	24	24	26	27	27
Cost per Auto Commuter (\$)	859	822	786	716	679	643
Rank	21	21	23	27	30	31
Truck Congestion						
Annual Person-Hours of Delay (000)	1,726	1,613	1,521	1,353	1,248	1,144
Rank	23	24	24	26	27	27
Annual Gallons of Wasted Fuel (000)	4,769	4,459	4,203	3,741	3,449	3,162
Rank	20	20	20	23	23	25
Annual Congestion Cost (\$ million)	51	47	44	39	35	31
Rank	22	24	24	25	26	27

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Mobility Data for Portland OR-WA

Inventory Measures	1993	1992	1991	1990	1989	1988
Urban Area Information						
Population (1000s)	1,275	1,245	1,220	1,190	1,180	1,170
Rank	28	27	28	28	28	27
Commuters (1000s)	445	428	413	396	389	383
Daily Vehicle-Miles of Travel (1000s)						
Freeway	10,315	9,760	9,000	8,605	8,385	7,905
Arterial Streets	10,480	10,225	10,115	9,810	9,690	9,705
Cost Components						
Value of Time (\$/hour)	10.78	10.47	10.17	9.75	9.25	8.83
Commercial Cost (\$/hour)	27.02	26.66	26.30	25.95	25.60	25.26
Gasoline (\$/gallon)	1.26	1.26	1.48	1.16	1.32	1.22
Diesel (\$/gallon)	1.29	1.33	1.28	1.01	1.17	1.08
System Performance	1993	1992	1991	1990	1989	1988
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	13,701	12,597	11,851	10,671	10,177	9,753
Rank	23	24	23	24	22	21
Fuel per Peak Auto Commuter (gallons)	11	10	10	8	7	7
Rank	22	24	19	35	39	27
Annual Delay						
Total Delay (1000s of person-hours)	25,021	23,005	21,642	19,487	18,586	17,810
Rank	26	26	26	26	25	25
Delay per Auto Commuter (pers-hrs)	33	31	30	28	27	27
Rank	18	22	20	21	21	18
Travel Time Index						
Rank	7	11	13	15	11	13
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	301	269	249	213	195	179
Rank	26	26	25	26	25	25
Cost per Auto Commuter (\$)	606	574	557	524	528	533
Rank	29	29	27	29	27	23
Truck Congestion						
Annual Person-Hours of Delay (000)	1,051	966	909	818	781	748
Rank	26	26	26	26	25	25
Annual Gallons of Wasted Fuel (000)	2,905	2,671	2,512	2,262	2,158	2,068
Rank	23	24	23	24	22	21
Annual Congestion Cost (\$ million)	29	26	24	21	20	19
Rank	25	25	25	26	25	24

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Mobility Data for Portland OR-WA

Inventory Measures	1987	1986	1985	1984	1983	1982
Urban Area Information						
Population (1000s)	1,160	1,155	1,150	1,140	1,130	1,130
Rank	27	27	27	27	26	26
Commuters (1000s)	376	371	366	359	353	350
Daily Vehicle-Miles of Travel (1000s)						
Freeway	7,530	7,060	6,470	5,955	5,725	5,500
Arterial Streets	9,670	9,655	9,635	9,705	9,865	9,760
Cost Components						
Value of Time (\$/hour)	8.48	8.18	8.03	7.75	7.43	7.20
Commercial Cost (\$/hour)	24.93	24.60	24.27	23.94	23.63	23.31
Gasoline (\$/gallon)	1.22	1.19	1.56	1.58	1.61	1.69
Diesel (\$/gallon)	1.08	1.06	1.38	1.40	1.43	1.50
System Performance	1987	1986	1985	1984	1983	1982
Congested Travel (% of peak VMT)	--	--	--	--	--	--
Congested System (% of lane-miles)	--	--	--	--	--	--
Congested Time (number of "Rush Hours")	--	--	--	--	--	--
Annual Excess Fuel Consumed						
Total Fuel (1000 gallons)	9,353	8,800	8,390	7,826	7,216	6,628
Rank	20	21	21	21	20	18
Fuel per Peak Auto Commuter (gallons)	7	6	6	7	5	5
Rank	22	28	22	12	22	16
Annual Delay						
Total Delay (1000s of person-hours)	17,081	16,071	15,322	14,291	13,178	12,104
Rank	24	24	24	24	23	23
Delay per Auto Commuter (pers-hrs)	26	25	24	23	21	20
Rank	17	17	15	13	14	15
Travel Time Index						
Rank	11	11	11	12	13	14
Commuter Stress Index						
Rank	--	--	--	--	--	--
Freeway Planning Time Index (95th Pctile)						
Rank	--	--	--	--	--	--
Congestion Cost						
Total Cost (\$ millions)	166	151	144	131	117	105
Rank	24	24	24	22	22	21
Cost per Auto Commuter (\$)	533	522	504	489	471	449
Rank	23	24	23	21	21	21
Truck Congestion						
Annual Person-Hours of Delay (000)	717	675	644	600	553	508
Rank	24	24	24	24	23	23
Annual Gallons of Wasted Fuel (000)	1,983	1,866	1,779	1,659	1,530	1,405
Rank	20	21	21	21	20	18
Annual Congestion Cost (\$ million)	18	17	16	15	14	12
Rank	23	22	22	22	21	21

* Note: Zeroes in the table reflect values less than 0.5.